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A TOTAL COST MODEL FOR DRG 225 (FEET AND FOOT PROCEDURES) WAS CONSTRUCTED TO VALIDATE THE "PRIVATE PRACTICE" ASPECT OF THE GROTON PLAN. THE GROTON PLAN IS A PROVIDER PRODUCTIVITY INITIATIVE DEVELOPED BY THE FORMER COMMANDING OFFICER OF NAVAL HOSPITAL, GROTON AND SUPPORTED BY THE SURGEON GENERAL OF THE NAVY. THE DESIRED OUTCOME OF THIS GRADUATE RESEARCH PROJECT WAS A MODEL THAT PROVIDED THE TOTAL COST OF PERFORMING A SPECIFIC CLINICAL PROCEDURE AND UTILIZED EXISTING COST COLLECTION SYSTEMS. THE RESULTANT PROTOTYPE DEMONSTRATED THAT A MODEL OF THIS NATURE COULD BE CONSTRUCTED; HOWEVER, ITS APPLICABILITY TO GROTON PLAN VALIDATION IS

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"REPRODUCED AT GOVERNMENT EXPENSE"

A STUDY TO DEVELOP AND APPLY A MODEL FOR DETERMINING THE TRUE COSTS OF PERFORMING A SPECIFIC CLINICAL PROCEDURE AT NAVAL HOSPITAL GREAT LAKES

A Graduate Management Project
Submitted to the Faculty of
Baylor University
In Partial Fulfillment of the
Requirements for the Degree

of

Master of Health Administration

by

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LIST OF TABLES

I. Introduction

Background

The issue of innovation as a means of increasing provider productivity, and patient access and satisfaction, has recently caught the attention of the Navy's Surgeon General, Vice Admiral James A. Zimble. In his first, "Annual Report of the Surgeon General," Admiral Zimble detailed many unique projects being undertaken at both the Department of Defense and Naval Medical Command levels that are aimed at improving our health care delivery capability. One initiative that has been repeatedly mentioned by the Admiral as being successful in achieving this goal is the "Groton Plan," the brainchild of Captain Hugh Scott, a physician and former Commanding Officer of Naval Hospital Groton (1988, 6).[1]

One aspect of the Groton Plan that has been identified as a means of increasing provider productivity and correspondingly, patient satisfaction through improved access, is the, "Private Practice Model." Dr. Scott developed the Private Practice Model with the assistance of Naval Hospital Groton's comptroller, Lieutenant Commander Bob Acklin, when he realized that many Navy physicians have never practiced medicine in a civilian setting and therefore, in his

opinion, do not have an appreciation for what constitutes a "profitable" practice pattern. That is to say, most are not aware of the number of patients they would have to treat to be financially successful in a solo or group practice.[2]

Very simply put, the Private Practice Model consists of the following: A civilian doctor in private practice would have to produce a given amount of revenue to cover his expenses. So, if after computing expenses, including his salary and malpractice coverage, a physician determines that he needs to generate $1000 a week in revenue, at $50 per visit (a figure derived from prevailing charges for the same services in the locale in which the hospital operates), the M.D. would have to see at least 20 patients a week. If there is more than one provider in the service or practice, the responsibility for meeting the revenue target is shared equally among the practitioners. What Captain Scott has done is to take this principle and apply it to the military health care setting, something that has never been attempted before. As Dr. Scott envisions it, Navy health care providers who are able to generate a profit for their service (e.g. dermatology clinic, pediatric clinic, etc.) would be given special recognition. This would be in the form of favorable comments on their

annual performance evaluation, military awards, and possibly, productivity bonuses. The latter being derived from funds the hospital would save the Navy by recapturing Civilian Health And Medical Program of the Uniformed Service (CHAMPUS) workload and corresponding dollars (Matthews 1988, 22; Acklin 1988, p.i.).

Purpose of the Study

While many positive things have been said and written about the Groton Plan, there are those who are skeptical about its effectiveness in achieving the desired objectives of increased provider productivity and improved patient access. The group that has been most critical are the Naval Hospital Groton health care providers who have been subjected to the provisions of the Private Practice Model aspect of the Plan. More specifically, it is the physicians whose services rely heavily on surgery as means of treating patients who are challenging the Plan's validity. When he was told that his service had a net loss of $142 thousand in fiscal year 1987, the Head of the Otolaryngology Department at Naval Hospital Groton took exception to the report. The physician's chief complaint was that the Private Practice Model only looks at outpatient activity and that if you include inpatient workload, his service actually exceeded presribed objectives.[3]

Because it excludes inpatient costs, it could be construed that the Private Practice model is flawed and therefore invalid. Figure 1., which was derived from Naval Hospital Great Lakes' fiscal year 1988 health care expenditures report, depicts the facility's inpatient and oupatient costs for the period.[4]

Naval Hospital Great Lakes

FY 88 Operating Costs

Total Inpatient Operating Costs: $17.95 million

Total Outpatient Operating Costs: $31.88 million

Facility Total Operating Costs: $49.83 million

Figure 1.

From the table, it is apparent that inpatient costs are a significant portion of the hospital's overall operating expense and bear scrutiny. However, the fact that this seemingly essential part of any hospital financial analysis model is missing, is not the only shortcoming of the Private Practice prototype. There are other variables, both included and omitted, that merit further inspection.

One component not included in the Private Practice Model that could adversely affect the cost of providing care, is physician practice patterns. The significance

of this variable can be demonstrated using a scenario similar to the aforementioned example of a physician who needs to see 20 patients a week to "break even." For example if a hospital's Pediatric Service has three health care providers, two physicians and one nurse practitioner, as a group they would need to see a total of 60 patients to cover their operating costs. As a unit they may be successful in attaining or exceeding this goal but when individual practice patterns are examined, it may show that one provider is more productive than the others. In this example, it may be the nurse practitioner who treats the largest number of patients simply because the acuity level of the people she sees is lower than those seen by the physicians.[5]

Generally speaking, another physician practice pattern related factor that is an integral part of any provider productivity model is the total cost of treating a patient. Using the previously mentioned example of three practitioners, physician A may see 20 patients and meet his revenue target but he may be ordering twice as many ancillary procedures as physician B, for the same diagnosis and outcome. If this were actually the case, it would be incorrect to assume that since the service met its stated goal of treating X number of patients per specified period, that it is

contributing to the overall profitability of the hospital. In this illustration, the question of whether the service contributed to the hospital's bottom line would depend on the magnitude of excess medical procedures being ordered by physician A. One of the fallacies of the Groton Plan is that it specifically excludes the cost of tests ordered by providers, an easily identified direct cost, in the analysis of provider/service productivity data. The rationale for not including the cost of medical tests in the analysis is that civilian providers, "would generally refer pharmacy, lab, x-ray, and other requirements outside their practice" (Groton Hospital Staff 1988, 1).

Another shortcoming of the Groton Plan is that the figure used as the per patient charge, is the amount civilian practitioners within a forty mile radius of Naval Hospital Groton received from CHAMPUS, for the same category of care. For example, if CHAMPUS paid an average of $150 for every orthopedic outpatient visit in the Groton area, this amount would be used in the formula to determine the number of patients an orthopedic provider would need to treat to meet his costs (Groton Hospital Staff 1988, 1). The problem with using CHAMPUS data for this purpose is that their figure is an <u>average</u> for <u>all</u> care within a specific speciality.

To categorically say that, "since CHAMPUS pays $150 per orthopedic visit, this is the figure that Naval Hopital Groton will use," implies that Groton's civilian and military providers have identical case mixes. This premise should be considered invalid until, through further analysis, it is proven to be true.

An equally important facet of the Groton Plan worth analyzing is the Hospital's response to those services that are unable to, "meet workload quotas." What action should the hospital take? Referring to the Head of Naval Hospital Groton's Otolaryngology Department previously mentioned rebuttal, in addition to making it known that the service he provides is predominantly inpatient related, he rebuked the hospital for not providing adequate personnel and equipment support. The Department Head contends that if his Service had sufficient equipment and ancillary personnel, he could meet the prescribed volume of outpatient visits. How should Naval Hospital Groton react to a physician's assertion that they are suppressing productivity? Furthermore, is it always necessary for a particular service in a hospital to be profitable? In some instances the hospital may have to provide the care regardless of whether the service is remunerative or not. A prime example of this concept is a military

hospital operating outside of the continental United States. It is unlikely that the type of specialties a U.S. Naval hospital in Italy maintains will be be based on the service's ability to make money. The decision to provide the service will be based on other predisposing factors such as, nonavailability of the speciality in the local community, different standards of care, or military necessity.[6] Additionally, in the civilian health care sector it is not uncommon for hospitals to be,"loss leaders," in certain services if it increases market share in others (Porn and Manning 1988, 32). A community hospital that is losing money on its birthing center would probably continue to provide the service if the losses are being offset by gains in its pediatric market share.

The recognition the Groton Plan and its author Captain Scott have received, is well deserved. It is afterall, the first such effort of its kind in the Naval Medical Department. However, like most initial offerings of any model, it is not without fault as discussed in the preceeding paragraphs. Captain R. K. Zentmeyer, past Commander of the Naval Medical Command Northeast Region and formerly, Captain Scott's immediate superior, believes that the major imperfection with the Groton Plan is that it does not identify the actual

(total) cost of treating a patient. It is Captain Zentmeyer's opinion that for a model of this nature to be an effective management tool, it should examine costs from the time the person presents at the medical treatment facility, until the patient is symptom free.

Problem Statement

The purpose of this study is to develop and apply a model for determining the true costs of performing a specific clinical procedure at Naval Hospital Great Lakes.

Endnotes

1. Naval Hospital Groton is located within the complex of Naval Submarine Base, New London, Conneticut. The hospital has 27 operating beds with an average occupancy rate of 70% and serves a beneficiary population of 45,246 (Extracted from the Commander, Naval Medical Command Northeast Region's FY89 Executive Summary).

2. Generally speaking, the health care providers Captain Scott feels lack sensitivty to the true cost of practicing medicine are the physicians who come into the Navy directly from medical school.

3. In his 4 August 1988 memo, the Head of the Otolaryngology Department rebutted two earlier memos from Dr. Scott which stated that, "when subjected to Groton Plan analysis, his Department lost $141,858 in FY87." The M.D. used a formula he developed to demonstrate that when the Otolaryngology Department's outpatient and inpatient workload are combined, the service actually made a profit of, "nearly a quarter of a million dollars." He further wrote that, "if he had another Hospital Corpsman assigned to his service, and improved dictation capabilities, that he could see more patients."

4. Naval Hospital Great Lakes data is used because the facility is the site for this study. The hospital, which has 139 operating beds, is located next to Naval Training Center, Great Lakes, Illinois, and serves 77,320 benficiaries (Extracted from the Commander, Naval Medical Command Northeast Region's FY89 Executive Summary).

5. In this situation the nurse practitioner may be responsible for screening all incoming patients, treating those which she is able, and referring the more dificult cases to the peditricians. It is likely that this would make the nurse practitioner's workload, in terms of number of patients seen, greater than the physicians.

6. An example of a military medical service that is necessary regardless of the volume of patients, is Flight Surgery. Military hospitals located on air bases or stations have Flight Surgeons assigned to ascertain that pilots are medically qualified to fly.

II. Literature Review

Total Cost Defined

The total cost of producing a finished product, whether it be an automobile or a well patient, is the sum of the direct costs and the indirect costs (Berman, Weeks, and Kukla 1986, 631).[1] What differentiates the two in hospitals is that indirect costs are associated with administrative and support departments while direct costs are, "costs in the departments that have traditionally billed for their services" (McSweeney, Herbert, and Holroyd 1985, 35).

Not all authors of health care financial texts subscribe to the, "total costs = direct costs + indirect

costs," formula, however. Johnson wrote that in addition to direct and indirect costs there is a third category known as, "institutional overhead or burden." According to Johnson, direct costs are those that can be directly associated with a specific product within an identifiable cost center. For example, if the finished product is a well patient, a cost that is directly attributable to the outcome would be the charge for medications administered during the regimen of care. Johnson defines indirect costs as those costs which can be pinpointed to a particular cost center but not to the product itself. Using the example of the well person as a finished product, the ward clerk's salary at the hospital where the patient was treated would be representative of an indirect cost.[2] Johnson's third category, institutional burden, consists of costs incurred in support of the production function that cannot be traced to a particular product or workcenter. In a hospital, the Chief Operating Officer's salary could be categorized as institutional overhead since the cost cannot be assigned to any one patient (1987,18).

In this paper the, "indirect plus direct costs equals total cost," precept will be used. The rationale for doing this is that the cost accounting system presently in place at Naval Hospital Great Lakes, the

Medical Expense and performance Reporting System (MEPRS), classifies all costs as either direct or indirect.

Importance of Identifying Total Costs

Generally speaking, civilian and military health care organization's operating costs have risen while reimbursement, or in the case of federally funded facilities, resource allocation, has been lagging behind. In civilian institutions it was the advent of Medicare's prospective payment system (PPS) that caused operating margins to dwindle. In military hospitals, Department of Defense budet cuts resulting from implementation of Gramm, Rudman, and Hollings legislation, and changing priorities have meant fewer dollars allocated for health care. To compensate for this diparity between income and outgo, hospital administrators have placed a special emphasis on controlling costs. As stated by a physician, "It is difficult to select the most cost-effective approach to caring for a patient if the true costs of each component service is unknown" (Conn, Aller, and Lundberg 1985, 1586).

Method for Identifying Total Cost

A common method for identifying the exact cost of producing a finished product is through employment of a

cost accounting system. Large businesses such as automobile manufactures have been using cost accounting for years but in the health care industry it has just recently gained widespread acceptance (Kasiw, Hanlon, and Wulf 1987, 458). The rationale for utilizing a cost accounting system in health care is the same as for any other industry, "to provide the hospital with the true cost of their producing their products and providing their services" (Mendenhall, Shepherd and Korbinski 1987, 34). In addition to providing administrators with accurate information for decision making purposes and a means for controlling costs, an effective cost accounting system can be a useful tool to assist the hospital in, "negotiating competitive healthcare contracts" (Mendenhall et. al., 1987, 34). For example, as a result of implementing a cost accounting system, the Cleveland Clinic Foundation can quote fixed prices for seventeen procedures. This includes physician as well as the per diem costs and is something that very few hospitals can do (Herzingler 1989, 101). Having this information at hand allows the Cleveland Clinic Foundation to more accurately establish the fee schedule for the services it provides and allows it to be more competitive as a Preferred Provider Organization (PPO). Additionally, once the actual cost of producing the

finished product is known, the cost accounting system can be set up to flag unusually large expense variances in the production process (Kaskiw et. al. 1987, 463).

Other Cost Finding Methods

Prior to the advent of cost accounting in health care, hospitals measured aggregate costs for a functional unit such a department or service rather than costs within that unit. This was perceived by many to be the simpliest way to measure revenue against expenses and was fostered by the former Medicare and Medicaid reimbursement formula which paid on a, "percentage of allowable cost basis" (Burik and Duvall 1985, 22). The process of measuring aggregate cost of operating a department and then dissecting the cost to get an average charge is known as top down accounting.[3] This is in contrast to bottom up, or cost accounting, which keeps track of expenses as they occur during the production process. A major shortcoming of the top down system is that it deprives the manager of the ability to identify and mange costs as they are incurred. Another significant fault with top down systems is that they are not able to react as quickly to changes such as inflation. Also, top down accounting systems inhibit the manager's ability to determine what the hospital should charge for a particular product or service within

a unit since he has no idea what it actually cost to produce until costs are aggregated (Travis 1987, 50).

Establishing A Cost Accounting System

The basis for establishing a cost accounting system is that it should be practical, cost effective and integrated (Burik and Duvall 1985, 78). To be practical, the system must provide discernible expense information that is precise. Practicality is discipated if the system provides personnel costs in, "minutes per procedure," when, "hours per procedure," would have been a sufficient unit of measure. To achieve cost effectiveness, the system should provide only necessary information. A useful means for determining what constitutes, "necessary information," is Pareto's Principle which states that, "20 percent of service items can be expected to account for 80 percent of the dollar value of the activity." Applying the principle, if physician labor is the predominant expense in interpeting an X-ray, collecting information related to that expense would be more desireable than accumulating more obscure data, such as expendable supplies consumed. System integration implies that the information generated has more than one use. In addition to monitoring departmental or unit performance, an integrated system could provide information which

could be utilized in budget preparation, workload projection, or other financial management elements (Burik et. al., 1985, 78).

Endnotes

1. Berman et. al. also point out that each item produced must include a fair share of the indirect or overhead cost. This point becomes important later in the paper, when the method by which indirect costs are allocated at Naval Hospital Great Lakes, is examined.

2. Theoretically speaking, it is possible to pro rate the cost of a ward clerk's salary to an individual patient account. One of the less complex ways of accomplishing this task would be through the use of length of stay (LOS) data. Totaling the number of patient days for a particular ward and dividing the ward clerk's salary by that figure would produce a, "ward clerk cost per patient day." To compute a particular patient's share of the ward clerk's salary, multiply the ward clerk cost per patient day figure by the individual's LOS.

3. Taking the total cost of operating a department within a hospital for a specified period and dividing that figure by the number of procedures completed to arrive at an average cost per procedure, would be an example of top down accounting. This is in contrast to

bottom up accounting which would entail monitoring the cost of each of the procedure's components as they are utilized in the production process to arrive at the exact cost of performing that procedure.

III. Current Study

Objectives

As previously stated, the purpose of this study is to develop and apply a model for determining the true costs of performing a specific clinical procedure at Naval Hospital Great Lakes. To complete this project, the following objectives were to be met:

(1) Review literature concerning methods for collecting and determing cost per medical procedure.

(2) Identify and evaluate existing models for applicability to this study.

(3) Determine a specific clinical procedure to use for this study.

(4) Develop a method for calculating all expenses attributable to doing the procedure at Naval Hospital Great Lakes.

(5) Determine the cost of performing the procedure at Naval Hospital Great Lakes.

(6) Develop a universal model for ascertaining the actual cost of performing other clinical procedures in Continental United States (CONUS) military, medical treatment facilities (MTFs).

Criteria

Criteria to determine whether the objectives were met are as follows:

(1) The model must not be too impractical to be of any use by Navy, Bureau of Medicine and Surgery, financial managers.

(2) Scope of the evaluation of the selected procedure will be from the time the symptom is first reported, until the patient is discharged or has received optimal care as defined by the attending physician or care giver.

(3) Existing data collection systems will be used to the fullest extent possible to preclude additional costs to the hospital.

Assumptions

Portions of this study which are implied include:

(1) The necessary data is available and it is reliable.

(2) There is an equitable means for allocating overhead costs at Naval Hospital Great Lakes.

(3) Only medical procedures requiring inpatient care will utilized in this study.[1]

Limitations

Taking into consideration the second criteria from above, applying the model to more than than one clinical procedure is beyond the time limitation and scope of this study.

Methodology

Discussion in this section pertains to the method by which the model was constructed including the data that was utilized. Also included is an evaluation of the cost collection method presently employed at Naval Hospital Great Lakes.

Cost Collection Method At Naval Hospital Great Lakes. The system for collecting and allocating costs presently being utilized at Naval Hospital Great Lakes is the Medical Expense and Performance Reporting System (MEPRS). MEPRS is a step down accounting system which takes a function's or service's direct costs plus an apportioned share of total indirect costs (overhead) to arrive at a per unit cost. Figure 2., on the following page, displays some of the common MEPRS direct and indirect cost categories for a fictitious radiology

department. Figure 2. also depicts how the per unit cost for a product produced by this department is arrived at under the MEPRS system.

Radiology Department, Naval Hospital
Total Procedures 1st Qtr.= 1000

<u>Direct Costs</u> ($)		
Labor		
Civilian	10,000	
Military	15,000	
Purchased Services	3,500	
Supplies & Equipment	5,000	
Total		33,500
<u>Indirect Costs</u> ($)		
Depreciation	50	
Admin Support	50	
Utilities	500	
Maintenance	50	
Transportation	50	
Operating Services	50	
Housekeeping	500	
Laundry	100	
Supply Services	100	
Patient Admin Services	50	
Total		1,500
Total 1st Quarter Cost		$35,000

Cost Per Procedure = $35,000 ÷ 1000 = $35

Figure 2.

Included in the category of Admin Support for indirect costs is the radiology department's prorated share of the facility's total education and training expense. Incorporated into Operating Services are the expenses for communication and fire protection and security. Medical repair costs are consolidated with

the cost of procuring materiel for the hospital, to arrive at total indirect expense for Supply Services.

Under the MEPRS system, the method used to determine each department or service's share of the total indirect costs is amount of space occupied. For example, if the radiology department occupied five percent of a facility's total square footage, than five percent of the hospital's total indirect costs would be charged to that service. If a health care facility has implemented a physician productivity plan similiar to that of Naval Hospital Groton, this method for allocating overhead costs may be inequitable for some services. To illustrate this point, according to the second quarter of fiscal year 1988 (FY88), "Hospital Based Group Practice," analysis, Naval Hospital Groton's Urology Clinic had .36 full time equivalent (FTE) providers who saw 348 patients. For the period, the Urology Clinic was allocated $17,690 of the facility's total overhead costs. In contrast, the Gynecology Clinic, with .85 FTE providers, saw 3,371 patients but was only allocated $16,029 of the hospital's second quarter FY88 overhead costs. All things considered, it seems as though the larger the volume of patients seen, the greater the utilization of those services categorized as being, "overhead".

Clinical Procedure Utilized. The clinical procedure chosen for this study is from Diagnosis Related Group (DRG) 225, "foot procedures" (Jones, 1988). The rationale for choosing this particular procedure include:

- DRG 225 parallels the lack of specificity used by the CHAMPUS schedule.[2]

- The DRG for podiatry is all inclusive, that is to say that DRG 225 includes all inpatient medical and surgical procedures involving the foot.

- At Naval Hospital Great Lakes, once a patient has been diagnosed with a podiatric anomaly which requires inpatient care, standard orders are invoked by the attending health care provider.[3]

- Patients who fall into the category of DRG 225 are more apt to meet the second criteria (e.g. the patient shows with a medical condition, is seen and treated by a care giver, returns for therapy as needed, and eventually becomes asymptomatic).

Developing a Cost Collection Model. Reviewing medical records of patients with admission codes of DRG 225 was the first step in the cost collection model development process. Identifying records to be reviewed was accomplished by selecting a month in FY89 at random and generating a list of all inpatients admitted under

DRG 225 during that period. Appendix A. is the list of DRG 225 patients for April, 1989, the selected month. Of the fifteen DRG 225 patients who were admitted in April, the Medical Records Department of Naval Hospital Great Lakes could only produce five complete records. These records were reviewed to determine what resources were expended in the patient's treatment. Treatment for Patient A., who was diagnosed as having a painful callus on the right foot, was the most extensive of all five patients and consisted of the following:

1) Outpatient visit to confirm diagnosis
2) Admitted day before surgery (5 April)
3) Admission physical examination by Orthopedic Resident
4) X-ray of right foot before and after surgery
5) Ancef[tm] before and after surgery via intravenous route
6) Nurse anesthetist visit prior to surgery
7) One hematology test prior to surgery and one after
8) Valium[tm] 20 mg. orally prior to surgery
9) Surgery performed by two Podiatrists in a operating room under a local anesthetic; assisted by one Registered Nurse and two Hospital Corpsmen

10) One hour of recovery room care

11) Lab analysis of specimen

12) Versed[tm] x 2 via intravenous route after surgery

13) Demerol[tm] 50 mg. x 4 intramuscularly

14) Tylenol #3[tm] orally

15) Naprosyn[tm] 250 mg. orally four times a day for ten days

16) Indocin[tm] two tablets three times a day for eight days

17) Crutches with one visit to Physical therapy for crutch instructions

19) Discharged 7 April

20) One follow-up visit in the Podiatry Clinic

There was little variation in the care the remaining four patients received since as with Patient A., their treatment included surgical intervention. The most common elements of care which varied from one patient to another, were the types and degree of ancillary services utilized. For example, one patient had three X-rays taken, while another didn't have any. Also, two of the patients had preoperative hematology tests but none postoperatively.

The Cost Collection Model For DRG 225. The model is constructed using FY89 MEPRS data for Naval Hospital Great Lakes, the best available per unit cost data. Figure 3. utilizes the care provided to Patient A. to demonstrate the model for DRG 225.

Resources Expended:		
Inpatient Care	3 days	
Outpatient Visits	2 visits	
Radiology	2 procedures	
Pharmacy	12 prescriptions	
Laboratory		
Pathology	1 procedure	
Clinical	2 procedures	
Physical Therapy	1 visit	
Resource Cost($):		Total
Inpatient Care	770 per day	2,210
Outpatient Visits	46 per visit	92
Radiology	7 per procedure	14
Pharmacy	10 per perscription	120
Laboratory		
Pathology	3 per procedure	3
Clinical	1 per procedure	2
Physical Therapy	27 per visit	27
Total Cost For Patient A's Care		$2,468

Figure 3.

Endnotes

1. The selected medical procedure needs to include inpatient care in the overall treatment regimen to validate Dr. Hixon's claim that admitting a patient does affect physician productivity. Also, if inpatient care can be categorized within the DRG system (whereas outpatient visits cannot).

2. DRG 225 covers all foot afflictions and injuries that require inpatient care. This parallels the CHAMPUS schedule which allows for adjudication of claims based on type of service received. For example, if an individual fractures his wrist, the injury would be categorized as, "orthopedic," and reimbursement would be based on the average cost for all orthopedic claims in the locale where treatment was obtained (regardless of how extensive and complex the treatment may have been).

3. There is a set of standard physician's orders for each podiatry patient admitted to Naval Hospital Great Lakes regardless of the admitting diagnosis.

IV. Results and Discussion

Evaluation of the Model

While the desired result of developing a model to identify the total cost of treating a patient was achieved, lack of specificity detracts from the usefulness a prototype of this nature could provide. For example, in Figure 3., Patient A's care included three days of hospitalization. It is unlikely that the type of care Patient A received on days one and three of his stay was as extensive as day two, the day he had surgery. Yet, Patient A's inpatient care cost of $770 per day does not reflect this difference. Additionally,

the costs associated with actually performing the surgery are not shown as a separate expense but are incorporated in the per diem charge. This includes the salaries of all those involved with the surgery such as the Podiatrist and operating room personnel, as well as the cost of utilizing the OR suite and recovery room expenses. The reason for this shortcoming is the cost accounting system presently employed at DOD health care facilities, MEPRS. Utilizing MEPRS data, a Hospital Commander can determine the average cost of treating a patient in his facility (as well as many other average costs related to providing care) but the system cannot tell him the exact cost. Consequently, the Commander is denied many of the benefits this information could provide such as a means for quantifying, establishing, and monitoring physician practice patterns, something that is closely related to the Groton Plan concept. One hospital that is at the forefront of this type of cost controlling initiative is Abbott Northwestern of Minneapolis who in 1988, undertook a project to develop physician practice patterns for all medical procedures performed in their facility. The project entailed having the staff physicians develop protocols for treating the best case scenario for each type of patient. Physician's who practice outside the standards

receive feedback to that affect. After the program was fully implemented, "almost without exception, the physicians changed their practice patterns" (Burda 1989, 18).

Akin to both physician practice standards and the model in Figure 3. is the concept of standard cost systems introduced by Surver, Jesse and Zelman. The concept was being promoted by the authors as a means to compare actual cost of providing care, against DRG reimbursement. Simply put, developing standard cost systems consists determining the resources needed to provide a medical service and then identifying the cost of those resources. One potential flaw with standard cost systems is the recommendation by Surver et. al. that standard cost be determined by, "dividing the total costs of resources by the volume of services provided" (1986, 76,78). The deficiency being that the standard cost may not represent the actual cost of the resource element.

Improving the Model

As previously mentioned, the most significant shortcoming of the model in Figure 3. is that it does not provide enough specific cost information. This is not the fault of the model but rather it points out a deficiency of the MEPRS system, the fact the expense

information it provides reflects averages rather than exact cost information. However, in its defense, MEPRS does provide expense information by category of patient so that individuals requiring more extensive treatment receive a larger share of the distributed expense. For example, the inpatient charge for a cardiology patient who requires highly specialized (and expensive) care would not be the same as for an individual hospitalized for a podiatry problem. MEPRS, through its step down accounting process, would identify all the expenses associated with caring for the cardiology patient to arrive at the cost for treating all patients within that category (or MEPRS code).

What then can be done to improve the model? The answer might be to dissect those cost elements that comprise the largest share of the patient's care into smaller units. Using the information in Figure 3. as an example, analyzing the inpatient care cost may be a means for obtaining a more accurate figure for what it cost to treat Patient A since the element of inpatient care consists of various substantial sub-elements such as nursing care, surgery and its associated costs, and the actual bed charges. Can this be done within the existing expense data collection network (MEPRS)? In some instances it is already being done. For example,

MEPRS already provides information such as anesthesiology cost by minutes of service, the cost for using a surgical suite by minutes, and recovery room charges by minutes of service. Determining the actual cost of these services for Patient A would only require that utilization times be monitored and recorded. Regarding some of the other sub-elements, Appendix B, created by the OR Chief Nurse utilizing common database software, is a file of the material and equipment that one of the Podiatrist uses to perform a specific podiatry procedure. The Chief Nurse has created many files comparable to this one for all providers who perform surgery at Naval Hospital Great Lakes. From the file and supply records, the cost of consumable supplies used during surgery could be obtained.

One of the other significant expenses that is hidden in the inpatient care cost is the charge for nursing care. Given the fact that nursing care typically consumes the largest share of the hospital's personnel budget, nearly 40 percent, makes examination of this sub-element essential (Bost and Lawler 1989, 34). Many civilian hospitals, through time management studies and statistical analysis, are developing models to determine nursing costs for specific DRGs

(Comi McCloskey 1989, 44). The same models that are being developed for use in civilian hospitals could be adapted for use in MTFs. Again, it would result in a more precise cost of treating a specific category of patient.

V. Conclusions and Recommendations

The model which was created in this paper provides the Hospital Commander with a means for identifying the, "true," cost of treating a patient. However, it is not an acceptable substitute for the Groton Plan's Private Practice Model because it lacks specificity. The model that CAPT Zentmeyer envisions is possible but would it require modification of the existing expense data collection system before it could be constructed. The expense of such an endeavor may not justify the cost. A potential alternative is to establish practice standards for the predominant services that the hospital provides as a means for determining whether a particular provider is generating sufficient workload. Intermountain Healthcare, Inc. resorted to practice standards when a study they conducted found that physician consumption of services for treating similar categories of patients, varied by as much as 40 percent (Jeppson 1989, 62).

Another issue that must be considered when discussing physician productivity and health care cost

models is quality. As Mendenhall et. al. noted, "the strongest proponents of cost accounting have generally ignored the need to deal with more of the quality assurance aspects of health care. The issue of quality assurance does warrant consideration considering that, "5 to 30 percent of patients have some adverse occurrences during their hospital stay" (1987, 35, 41).

Also, is recommended that before providers are subjected to any sort of productivity standards or cost controlling measures that the hindrances to meeting these objectives be removed. Some of the more common barriers that need to be evaluated include, shortages of ancillary personnel, lack of space and state of the art equipment, and committee assignments and military responsibilities.

Finally, this paper only looks at issue from the provider prospective. A study related to patient satisfaction at Naval Hospital Groton might further validate the effectiveness Groton Plan and more specifically the Private Practice aspect of the Plan.

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PERSONAL DATA-PRIVACY ACT OF 1974

AEBA ADMISSIONS WITH DIAGNOSIS CODES
FROM 01 APR 1989 TO 30 APR 1989

REG. NUM.	PATIENT NAME	SSN
	DIAGNOSIS	
0069065	STROUD,CHRISTOPHER T	
	CELLULITIS/POSSIBLE SEPTIC JOINT LEFT ANKLE	
0069079	IRWIN,WILLIAM H	
	CATARACT R EYE	
0069085	BRUDER,MICHELLE M	
	ELSVATING V OSTEOTOMY	
0069087	MARKEL,DOUGLAS G.	
	STRESS FX OF NAVICULAR R FOOT.	
0069163	CROWNOVER,MICHELE D	
	HALLUY ABDUCTO VALGUS DEFORMITY L FOOT	
0069164	ULRICHS,CHRISTINE A	
	HAMMER DIGITS 2/3 HANGLUNDS DEFORMITY R	
0069220	BROWN,TODD	
	5TH HAMMER DIGETS VARGUS ROTATED	
0069221	BOSTOCK,VERONICA L	
	L PLANTARFLEXED 3RD METATARSAL	
0069282	ROFFERS,GENE	
	R FOOT 2ND INTERSPACE NEUROMA	
0069343	OSBORNE,DANIEL	
	R 4TH 5TH HAMMERDIGITS	
0069344	O'HANIS,MICHAEL JAMES	
	BB PELLET ON LAT ASPECT 2ND DIGIT R FOOT.	
0069398	FIELDS,CONNIE M.	
	COCK UP HALLUX RT FOOT	
0069417	SEGALL,KENNETH BARRON	
	BROKEN R ANKLE	
0069463	CLISBY,SANDRA JEWEL	
	L HAV (BUNION)	
0069472	PARKER,RONALD ALAN	
	REMOVAL OF FIXATION R FOOT	

TOTAL PATIENTS: 15

MAIN OPERATING ROOM
SURGICAL CASE CARD

RGEON: GLOVER

PROCEDURE: OBLIQUE BASE WEDGE OSTEOTOMY, HAV BUNIONECTOMY

OVE SIZE: 8W

SITION: SUPINE

IN PREP: BETADINE PAINT

APING: HS, STOCKINETTE, EXTREMITY PACK

ES: 3-0 DEXON REEL, BLUE/RED VESSEL LOOPS PRN

TURE:
PERITONEUM:
FASCIA:
SUB-Q: 3-0 DEXON C-6/CE-4
SKIN: 4-0 NYLON P-3/FS-2
OTHER: PERIOSTEAL CAPSULE 2-0 DEXON C-6/T-19

NSTRUMENTS/SUPPLIES:
PODIATRY SET,BB,EB,MT,MAG PAD,PREP CUP,RXx2,MT,NEEDLE BOOK,SGx4,
LITE GLOVES,ST,FRAZIER TIP,FTCB,SCRATCH PAD,MSC,TB SYRINGE,
6ccSYRINES,10ccSYRINGE 18gaNEEDLEx3,20gaNEEDLEx1,27gaNEEDLEx3,
#15KBx6

PECIALTY INSTRUMENTS/SUPPLIES:
MINI DRIVER,MICRO OSCILLATING SAW,MICRO DRILL,SMALL FRAGMENT SET,
K-WIRES,GOLD HANDLED PIN CUTTERS,OSCILLATING SAW BLADES,IN ROOM
STANDARD SCREW SET,MINI FRAG SET,HERBERT SCREWS,BASIC INST.SET

EDICATIONS: 1%LIDOCAINE 50/50 MIX w/wo epi,.5%MARCAINE,DECADRON 2mg,BACITRACIN

RESSING: POD PAK,3x3 ADAPTIC 1/4"STERISTRIPS,4"WEBRIL,6"ACE,POSTERIOR SPLINT